A portrait of Dr. Montgomery reproduced from a photograph was published in *The Open Court* of March, 1912. The same number contains pictures also of his wife Elisabet Ney, her studio and some of her sculpture. P. C.

CURRENT PERIODICALS

The number of *Mind* for January, 1913, contains an article on "Rationalism and Empiricism" by George Trumbull Ladd. There is probably, he says, no other subject of controversy about which, and no other word under the cover of which, there has been more deplorable confusion and consequent inner bitterness and outward contempt than the subjects covered by the word "rationalism." "Strictly speaking, the words rationalism and rationalistic are properly used in philosophical terminology only as applicable to a certain *method* of exploring and ascertaining truth. Whenever they are used as applicable to the *content* of truth supposed to be thus ascertained, they are either misused or should be understood with caution. In violation of this caution, for example, pragmatism borrows the words, with all the opprobrium attaching to them in certain quarters, from the theological controversies of one and two generations ago, and in the name of empiricism holds up to ridicule and scorn many of the tenets of philosophy which were thought to be established on an empirical basis against the reigning dogmatism of that distant time. But rationalism is no more antithetic to empiricism than it is to idealism, or to realism, or to supernaturalism, or even to pragmatism. One might seem more justified in opposing it to scepticism; although it has almost invariably been identified with the most dangerous forms of scepticism when it has attempted to apply its method in a too unrestricted way to the problems of morals and religion. But on the one hand, one can neither theologize nor philosophize without some scepticism; and on the other hand, too much scepticism undermines all the authority and destroys all the work of reason, whether it be within the field of philosophy or theology, or even of the positive sciences."

S. Alexander, in a paper on "Collective Willing and Truth," continues the working out of a scheme of his for expounding psychological processes which depends on the principle that on the different levels of experience, perception, imagination, memory, and so on, there corresponds to each form of conation a certain form of non-mental object, or *cognitum*. The paper is to be continued,

and there are here published nine sections, which are concerned with experience of other minds, truth and intersubjective intercourse, goodness and truth, collective and individual believing, the science of truth, and mental propositions and their truth.

M. M. Pattison Muir deals with "Alchemy and the Absolute." "The Alchemists," he says, "were the most patient and thoroughgoing pursuers of absolute truth who have appeared among those who profess themselves scientific investigators. It cannot but be interesting to compare the aim, the method, and the phraseology of the alchemists, with the aim, the method, and certain technical expressions of the absolutist philosophers."

George H. Langley considers, in a paper on "The Metaphysical Method of Herbart," the method put forward by Herbart as the instrument by which inference can be made from the common concepts of experience to such knowledge of reality as shall render a rational explanation of experience possible. Herbart's philosophy is founded on Kant, as is Hegel's, though Herbart and Hegel are almost wholly opposed to one another. Hegel is the better known, for Herbart's attempt at continuation has been much ignored, and there is no English work on the subject; yet it is of interest as leading to a consistent pluralism.

In the "Discussions," there are three articles: one by B. Russell on some criticisms of G. Dawes Hicks on his views on sense-data in his *Problems of Philosophy*—this article contains a welcome and much more precise statement of his views—; H. P. Cooke has some remarks on his reviewer in "Ethics and the New Intuitionists"; and F. C. S. Schiller has a note on "Mysticism *v.* Intellectualism." Among the "Critical Notices," a notice by C. D. Broad of Meinong's book *Ueber Annahmen* is particularly to be noticed.

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The number of the *Revue de Métaphysique et de Morale* for January, 1913, begins with an article by A. Meillet on the method of comparative grammar, where he describes the principle of the process of reasoning of the cultivators of comparative grammar and examines the demonstrative value of this reasoning. L. Weber, in an article on the rhythm of progress and the law of the two states, continues the working out of his hypothesis that intellectual progress, instead of obeying Comte's law of the three states, shows the kind of binary rhythm consisting in the alternation of preponderating influence of technical activity and speculative activity. Charles Dunan continues his study on the nature of space; the present article

is devoted to the nativistic conception of space. S. Ginzberg has a note on the equivocal meaning of particular propositions. "The quantification of the predicate, which is necessary when judgments are to be translated into equations, is quite useless for any one who only aspires to a satisfactory precision of the particular judgment. Thus I will accept as an interpretation of this judgment: 'Some and nothing but some S's are P's,' without asking whether S is subordinated to P or merely *crosses* with it. To express itself the particular judgment may say $v\mathrm{S} = v\mathrm{P}$ and $v\mathrm{S} = \mathrm{P}$, but not $z\mathrm{S} = v\mathrm{P}$. Thus, what I have done is the quantification of the subject." P. Boutroux has a critical study on L. Brunschvicg's *Les étapes de la philosophie mathématique*; and finally T. Ruyssen has a discussion on the practical question of temperance.

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"Scientia" (*Rivista di Scienza*) begins its thirteenth volume with the number for January, 1913. It is described as an "International Review of Scientific Synthesis"; appears every two months; and contains French translations of the Italian, German, and English articles, as well as the originals. E Walter Maunder has an article on sun-spots, giving astronomical details on the cycles of sun-spot activity.

Marcel Brillouin has an interesting article on the principle of relativity. This theory has been described in *Scientia* in enthusiastic articles by Castelnuovo and Langevin; but the present article is by a sceptical physicist and sounds a critical note. The new theory ignores the ether, and we cannot do this because electro-magnetic disturbances, unlike gravitation, require a finite time of propagation: "The existence of the ether is as certain for us as that of the air could have been before the invention of the pneumatic machine and compression-pumps." It is refreshing to read that "everybody agrees" about the relative motion of two material systems. Here the question is about the relative motion of a material system and the ether, and it must be remembered that the velocities which we can produce artificially on systems of some size are very small as compared with that of light. The work on whether there is a relative motion of material systems and the ether or not, of Stokes, Lorentz, Michelson, Fitzgerald, and others is referred to. The association of rigidity with perfect permeability to the motions of matter was an enigma—no greater nor less than the permeability of an immovable ether to electrons in the theory of Lorentz. To avoid this, the relativists propose to adopt for the electro-magnetic field the abstract

and purely algebraic point of view which we adopt, in default of better, in gravitation, where we cannot find any velocity of propagation; then, having taken away every material support for radiant energy, they have been led to attribute to this energy the two principal characteristics of materiality, inertia and weight. To put at the beginning of the theory the new principle of relativity which is based on a few electro-optical observations, and to extend it to the whole domain of natural science, is not physical but metaphysical.

M. Smoluchowski has an interesting article on the number and sizes of molecules and atoms. He protests against the tracing of a scientific atomic theory to Leucippus, Democritus, and Lucretius. Modern physics is an exact science, and atomism as an exact physical and chemical theory does not go back beyond Daniel Bernoulli (1738). The work of Dalton (1808), Hauy (1784), Bravais (1849), Clausius, and Maxwell; investigations on the size of atoms as due to Loschmidt (1865), Lord Kelvin, Dorn, Exner, Van der Waals, O. E. Meyer; and then very modern researches are referred to. Hardly has physics attained the solution of a fundamental problem of atomism when a number of other riddles arise. It is well that this should be so: if not, physics were a dead science.

E. Rignano studies the psychological nature of reasoning. In his previous articles in *Scientia* on attention etc., he traced the phenomena from their manifestations in the case of the lower animals, but in this article he follows a different method and only analyzes certain of the simplest and commonest forms of reasoning with human beings; in a second article the evolution of reasoning will be considered, and in a third article a study of its higher forms will be made.

F. Kühnert has an article on ideographic writing with the Chinese, which is of the greatest possible interest in connection with the analogy that Chinese offers with the symbolic logic of modern times. The formation of the Chinese characters, in its four stages, is described, and a wish is expressed that, when European civilization spreads to China, the language and the writing will remain intact.

R. Dussaud writes on the part played by the Phenicians and the Mediterranean Sea in primitive times. This part was a great one both from the points of view of politics, commerce, and general culture. The present article does not trace the various stages of it so much as show the method by which its history must be made precise. It is very curious, in fact, that Phenician history has been

attempted to be founded by means different from those used in Greek and Roman history.

Finally, G. Marchesini criticizes Lemaître and maintains the modernity of the educational views expressed by Rousseau in his *Emile*.

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The number for March contains a critical discussion by M. P. Rudski on the various methods for determining the age of the earth. These methods are: (1) that which depends on the theory of geological denudation and accumulation of deposits (Geikie); (2) that which depends on the theory of the secular cooling of the earth (Lord Kelvin and others); (3) that which depends on the salinity of the sea (the idea was due to Halley and the method has been developed in modern times by Joly and von Romer); (4) that which depends on the theory of the disintegration of radioactive matter (Strutt, Holmes, and Boltwood); (5) that due to G. H. Darwin in his researches on the evolution of the moon. The author concludes that, from whatever side we attack the problem we always arrive at the conclusion that the earth has a history dating back hundreds of millions of years.

E. Pringsheim contributes a somewhat technical article on radiation of heat and luminescence, which deals with the conditions under which Kirchhoff's law of radiation holds.

G. Henslow writes on ecology considered as bearing upon the evolution of plants. The word "ecology" was invented by Haeckel and means the study of plants and animals "at home." It is no longer enough for botanists merely to collect plants and examine the structure of their flowers and so on, solely with the view of their classification, as was formerly done; and it is ecology which everywhere reveals the origin of species by direct or self-adaptation to new conditions of life. This conclusion derived from the study of plant life is equally true for the whole of the animal kingdom.

F. Oppenheimer has a long article on value and excess value. The first part of this contribution to political economy is on the "monopoly" theory of excess value.

E. Naville writes on the scholastic method in the science of language. The word "scholastic" is not used in a depreciatory sense; it is defined as a method of argument founded on reasoning and not on facts of observation. In modern times people have begun to study living and spoken languages which are rapidly becoming obsolete; and the author believes that this science of linguis-

tics, which takes care not to construct, by the help of pure reasoning, theories which are logically very sound but are only artificial creations, is in the right direction.

R. Pettazzoni deals with the science of religions and its method. In the usual division of the study of the history of religions, non-civilized peoples are put on the same plane as civilized peoples of antiquity and of modern times; neither the historical method (a study in time) nor the comparative method (a study in space) ought to be exclusively used. There is, says the author, one thing which is certain. It is that we have not here to deal with two methods which we have to make to walk side by side, but with a unitary conception which is founded on the nature of the object—the religious fact which is one and definite in its essence—which is proper to it.

A critical note by A. Levi deals with the problem of morals as exposed in a book by Limentani. There are two general reviews; one by F. Botazzi on some fundamental concepts of the chemistry of colloids; and the other is by A. Van Gennep on the Iliad as an economical poem, with reference to Walter Leaf's *Troy, a Study in Homeric Geography* (London, 1912).

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The first number of *Isis,* an international quarterly journal devoted to the history of science, appeared in March. The aim of this journal is to study the genesis and development of scientific theories, taking account of all the changes of ideas and influences that the progress of civilization constantly brings into play; and to unite all the materials necessary for this study and perfect its method and working-instruments. The ideal program of the journal is admirably sketched by the editor, Dr. George Sarton, in the first article of the number. After insisting on the necessity of closer relations between science and philosophy, he deals with the special subject of the journal: the history of science. The history of science as a whole, and thus as distinguished from the history of the sciences, was founded by Comte and continued, almost alone, by Paul Tannery. The definition of the history of science is that given above, and the author proceeds to examine, from the point of view of the interest they possess for this study: (1) the history of civilization; (2) the history of technology; (3) the history of religions; (4) the history of the fine arts; (5) archeological, anthropological, and ethnological researches. From the scientific point of view history has a great *heuristic* value, as has been emphasized, perhaps in rather

an exaggerated way, by Wilhelm Ostwald. The original work of the old masters of science is still full of treasures; and we must remember that not only is history important because there is often a recurrence of ideas in science—for example, some modern cosmogonies have forsaken Newton for Descartes—but also historical studies offer ground on which the splendid critical work of Mach, for example, has been raised. The author quotes the words of Mach:[1] "Those that know the entire course of the development of science, will, as a matter of course, judge more freely and more correctly of the significance of any present scientific movement than those who, limited in their views to the age in which their own lives have been spent, contemplate merely the momentary trend that the course of intellectual events takes at the present moment." Dr. Sarton then discusses the educational point of view and the point of view of individual and collective psychology, and concludes that *Isis* will strive: (1) to make the elaboration of a manual of the history of science possible; (2) to encourage the production of scientific text-books in which the matters are treated in the historical order of their development; (3) to prepare the sociological synthesis of humanity; (4) to reform, on deeper and firmer bases, the work of Comte.

The other articles are a note by I. Guareschi on the history of the movement discovered by Sir Robert Brown in 1827 of the particles contained in the pollen of plants; a note on the origins of science by G. Milhaud; and a biography of Paracelsus by E. Radl. There is an obituary notice of Poincaré, a portrait of whom is a frontispiece to this number; and there are notes on projected books and congresses, and analyses of published books. Finally a very important bibliography of the publications relating to the history of science which have appeared since the beginning of 1912 is started here. Where possible, publications are arranged in order of time, so that a first step is made towards the exhibition of the influences of the contemporary sciences on one another. It will be seen that the ideal of this new magazine has many points of contact with the ideal of *The Monist,* and we wish the new journal every success and shall make a point of collaboration with it for what ends are in common. Φ

[1] *Mechanics,* 3d. ed., Chicago, 1907, p. 7.